MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology

Standard Reference Materials Program

Bldg. 202 Rm. 211

Gaithersburg, Maryland 20899

SRM Number: 193 MSDS Number: 193

SRM Name: Potassium Nitrate Date of Issue: November 4, 1997

MSDS Coordinator: Carmen S. Davis FAX: (301) 926-4751

Phone: (301) 975-6776 E-mail: SRMMSDS@.nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: Potassium Nitrate

Description: SRM 193 consists of highly purified and homogenous lot of crystalline potassium nitrate.

Other Designations: potassium salt; saltpeter; niter

Name Chemical Formula CAS Registration Numbers

Potassium Nitrate KNO₃ 7757-79-1

DOT Classification: Oxidizer

ID#: UN 1486

class 5.1

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Potassium Nitrate	~ 100	No TLV-TWA established.*
		Rat, Oral: LD ₅₀ : 3750 mg/kg
		Rabbit, Oral: LD ₅₀ : 1901 mg/kg

^{*}The suggested ACGIH TLV-TWA for particulates not otherwise regulated is 10 mg/m³ for total dust.

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Solvent Solubility: Soluble in alcohol and glycerol.

Appearance and Odor: Colorless, transparent prisms or a white granular powder. Relative Molecular Mass: 101.10 Density: 2.11 Solubility in Water: Soluble.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA	
Flash Point: N/A Method Used: N/A Flammability Limits in Air (Volume %): UPPER: N/A LOWER: N/A	Autoignition Temperature: N/A
Unusual Fire and Explosion Hazards: . Potassium nitrate is not combustible and intensify the combustion of flammable materials.	e; however, it is a strong oxidizer that can ignite
Extinguishing Media: Use extinguishing media that is appropriate to the surro	ounding fire.
Special Fire Procedures: Fire fighters should wear a self-contained breathing pressure demand or positive mode and other protective clothing.	g apparatus (SCBA) with a full face piece in the
SECTION V. REACTIVITY DATA	
Stability: X Stable Unstable Conditions to Avoid: Avoid contact with incompatible materials.	
Incompatibility (Materials to Avoid): Potassium nitrate is incompatible w materials, metal salts and halogens.	vith acids, reducing agents, metals, combustible
See Section IV: Unusual Fire and Explosion Hazards.	
Hazardous Decomposition or Byproducts: Hazardous decomposition of oxides, including nitric oxide (NO), nitrogen dioxide (NO ₂), nitrous oxide (N ₂ O)	
Hazardous Polymerization: Will Occur	X Will Not Occur
SECTION VI. HEALTH HAZARD DATA	
Route of Entry: X Inhalation X Skin	X Ingestion
Potassium Nitrate: Inhalation of excessive concentrations of potassium ni respiratory tract. Eye contact with potassium nitrate may cause redness and pai Prolonged skin exposure may cause <i>anemia</i> (a condition in which the blood is total volume), and <i>methemoglobinemia</i> (the presence of methemoglobin, a solut from hemoglobin in that it contains ferric iron and is unable to combine rev <i>methemoglobinemia</i> may include <i>cyanosis</i> (a bluish or purplish discoloration blood), headache, weakness, dizziness, lightheadedness, ataxia, shallow respir lethargy, stupor, <i>dyspnea</i> (difficult or labored respiration), <i>tachycardia</i> (rapid death.	in. Skin contact can cause redness and irritation. deficient in red blood cells, in hemoglobin or in ble, brown, crystalline blood pigment that differs tersible with molecular oxygen). Symptoms of of the skin due to deficient oxygenation of the ration, drowsiness, nausea, vomiting, confusion,
Ingestion of large amounts of potassium nitrate may cause nausea and vomiting to evacuate the rectum or bladder), bloody diarrhea, <i>diuresis</i> (an increased exirregularities, <i>dysuria</i> (difficult or painful discharge of urine), <i>hematuria</i> (the <i>catharsis</i> , <i>albuminuria</i> (the presence of albumin in the urine and often symp urination). Rarely, inorganic nitrates may be converted to nitrites by nitrate resulting in <i>methemoglobinemia</i> . Reproductive effects have been reported in ar or prolonged exposure to nitrates can cause <i>anemia</i> , <i>nephritis</i> (acute or chronic degenerative process or vascular disease) and possible <i>methemoglobinemia</i> .	cretion of urine), generalized weakness, cardiac presence of blood or blood cells in the urine), tomatic of kidney disease) and <i>oliguria</i> (scanty reducing bacteria in the upper digestive tract, nimals exposed to repeated ingestions. Repeated
Medical Conditions Generally Aggravated by Exposure: Persons with pre-exposure to potassium and potassium containing materials.	existing kidney disease are at increased risk from
Listed as a Carcinogen/Potential Carcinogen:	Yes No
In the National Toxicology Program (NTP) Report on Carcinogens	Y

In the International Agency for Research (IARC) Monograph By the Occupational Safety and Health Administration (OSHA)



Emergency and First Aid Procedures:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Contact medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Contact medical assistance if necessary.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Contact medical assistance if necessary.

Ingestion: If ingestion occurs, wash out mouth with water. **DO NOT** induce vomiting. Contact medical assistance if necessary.

TARGET ORGAN(S) OF ATTACK: The skin and digestive tract.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in Case Material is Released or Spilled: Notify safety personnel of spills. Surfaces contaminated with spills should be covered with soda ash or sodium bicarbonate to neutralize the acid. Place the neutralized material into containers suitable for eventual disposal, reclamation or destruction.

Waste Disposal: Follow all federal, state and local laws governing disposal.

Handling and Storage: Provide general and local explosion proof ventilation systems to maintain airborne concentrations below the TLV. Provide approved respiratory apparatus for non routine or emergency use. Use an approved filter and vapor respirator when the vapor or mist concentrations are high. Wear gloves and chemical safety glasses where contact with the powder or crystalline form of this material. An eye wash station and washing facilities should be readily available near handling and use areas. Wash exposed skin areas several times a day with soap and warm water.

Note: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store this material in its original bottle at room temperature. It must be tightly recapped after use and protected from moisture.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Potassium Nitrate*, August 10, 1996.

Genium Publishing Corporation, MSDS No. 205 Potassium Nitrate, January, 1987.

Hawley's Condensed Chemical Dictionary, 11th ed., 1987. The American Heritage: Stedman's Medical Dictionary, 1995.

Webster's Ninth New Collegiate Dictionary, 1990.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified values for this material are given on the NIST Certificate of Analysis.